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| NECC_NETS_small | | **Lesson Plan for Implementing NETS•S—Template  *(More Directed Learning Activities)*** |
| ***Template with guiding questions*** | | | |
| Teacher(s) Name | Leslie Mitchell | |
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| Grade Level(s) | 9-12 | |
| Content Area | Algebra 1 | |
| Time line | 5 Days | |

**Standards** (What do you want students to know and be able to do? What knowledge, skills, and strategies do you expect students to gain? Are there connections to other curriculum areas and subject area benchmarks? )

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| Content Standards | Virginia Standards of Learning: A.11 The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions. |
| NETS\*S Standards: | Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments. |

**Overview** (a short summary of the lesson or unit including assignment or expected or possible products)

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| Day 1: Students will begin with a warm-up at the beginning of class asking questions of prior knowledge. Students will then begin lesson on “How to make predictions” using a scatterplot and line graph. Students will gain knowledge on plotting points and collecting data. Students will also gain knowledge on determining averages and formulas to be used.  Day 2: Students will begin with a warm-up from yesterday’s lesson. Students will be asked to plot points and determine averages. Students will then review concept from yesterday before beginning experiment. Students will individually be given 20 M&M’s, a small cup, a bag, a napkin, and a 2x12 table to record data on. Students will be instructed to individually take their M&M’s and place them in their cup. Students will then flip the cup over so that the M&M’s land on the napkin. Students will then be instructed to pick up any M&M that they cannot see the M face up on. These discarded M&M’s will be placed in the bag. The M&M’s remaining should be all M&M’s that are face up with a M. Students are to count these M7M’s as they place them back in their cup. Students will then record this effort under trial one. Students will continue the experiment in the same method until one of two things happen; they no longer have anymore “Face-up M&M’s” or they have made it to 12 trials. Students will then work with a group to determine the averages of each trail, to plot each trial on their scatterplot, and try to make a prediction as to what would happen in future trials based on the line graph that is drawn.  Day 3: Students will begin with a warm-up from this week’s lesson. Students will be asked to plot points and determine averages Students will take part in a classroom review, where students will take given data sets and make predictions as to what the outcome would be. Students will be tested tomorrow on content knowledge of making predictions based on data.  Day 4: Students will take a 20 question assessment on making predictions. Students in the assessment will be asked to determine predictions, plot points, and draw a line graph.  Day 5: Remediation Friday, students who did not do well on content will take part in remediation today. |

**Essential Questions** (What essential question or learning are you addressing? What would students care or want to know about the topic? What are some questions to get students thinking about the topic or generate interest about the topic? What questions can you ask students to help them focus on important aspects of the topic? What background or prior knowledge will you expect students to bring to this topic and build on?)

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| Given a set of data values, how do we plot them on a scatter-plot?  Which value would be considered the x-value and which would be considered the y-value?  How do we make a prediction given a set of data values?  Given a set of data values, what algebraic strategy could we also use in order to make a prediction.  What are some reasons as to why our prediction answers may differ from the experiment? |

**Assessment** (What will students do or produce to illustrate their learning? What can students do to generate new knowledge? How will you assess how students are progressing (formative assessment)? How will you assess what they produce or do? How will you differentiate products?)

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| Students will take part in a 20 question assessment on day 4. This will test overall knowledge of material. Students will be take part in formative assessments daily with warm-up questions and during classroom assignments to make sure students understand content. Students will be assessed on usage of the formula for averages, understanding of graphing points, and making predictions. Students who require additional assistance will have help during warm-up time daily and on Remediation Friday. |

**Resources** (How does technology support student learning? What digital tools, and resources—online student tools, research sites, student handouts, tools, tutorials, templates, assessment rubrics, etc—help elucidate or explain the content or allow students to interact with the content? What previous technology skills should students have to complete this project?)

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| Technology will be used during the lesson with the use of the Smart Board and Teacher computer. Students will also use a student handout made from an Excel document as a template. Students will also be asked to type in their values on the teacher computer excel spreadsheet that will displayed on the board for analysis. Students will be assessed using the PowerTeacher assessment which will allow for content and standard breakdown for help with remediation. |

**Instructional Plan**

**Preparation** (What student needs, interests, and prior learning provide a foundation for this lesson? How can you find out if students have this foundation? What difficulties might students have?)

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| Students will need to already have knowledge of a coordinate plane. Students will need to have prior knowledge of ordered pairs. Students will need to have prior knowledge of four quadrant graphing, however; students may struggle with just one quadrant. Students may have difficulty with understanding that the points are not connected together when graphing, instead, a line is drawn in the middle of all of the points and this is known as the line of best fit. |

**Management** (How and where will your students work? Classroom, lab, groups, etc?

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| Students will work in the classroom. Some assignments will be individual and group work will be done in pods. Students will understand that they must first finish their individual work, before; sharing with the group. |

**Instruction and Activities** (What instructional strategies will you use with this lesson? How will your learning environment support these activities? What is your role? What are the students' roles in the lesson? How can the technology support your teaching? What engaged and worthwhile learning activities and tasks will your students complete? How will they build knowledge and skills? Will students be expected to collaborate with each other and others? How will you facilitate the collaboration?)

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| Students will learn about predictions on an investigation level. Students use prior knowledge of graphing points and use investigation techniques to predict future trials. The teacher will walk around during the activity to make sure that each student understands their role in the assignment. The teacher will then help the students use investigation strategies to predict future trails. Students will use concepts to apply to future predictions. |

**Differentiation** (How will you differentiate content and process to accommodate various learning styles and abilities? How will you help students learn independently and with others? How will you provide extensions and opportunities for enrichment? What assistive technologies will you need to provide?)

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| Students will do individual investigation work. Student work will be differentiated by applying students to write tally marks for the number of M&M’s left instead of writing the exact number. Students will also be paired with partners to help students succeed with the group work. The teacher will walk around to assist students during work. Averages will be calculated by using a calculator displayed on the board so that students can follow along if they need to. Students will be asked for enrichment purposes how many trials needed to be done in order to make a realistic prediction. |

**Closure and Reflection** (Will there be a closing event? Will students be asked to reflect upon their work? Will students be asked to provide feedback on the assignment itself? What will be your process for answering the following questions?

**•** Did students find the lesson meaningful and worth completing?

**•** In what ways was this lesson effective?

**•** What went well and why?

**•** What did not go well and why?

**•** How would you teach this lesson differently?)

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| Students will be asked to describe their predictions based on their group work. Students will answers a series of questions to explain why the prediction makes sense. Students will explain why the strategies worked and how it could be applied to future predictions. I will use student data from the post assessment to determine if students understood content and what material needs to be re-taught or remediated on Friday. On Friday, Day 4, all Algebra 1 teachers will talk about data collected during the week and discuss what changes they feel like need to be done to the lesson to make it better for next year. |